

## **I. CENTRAL ARIZONA IRRIGATION AND DRAINAGE DISTRICT**

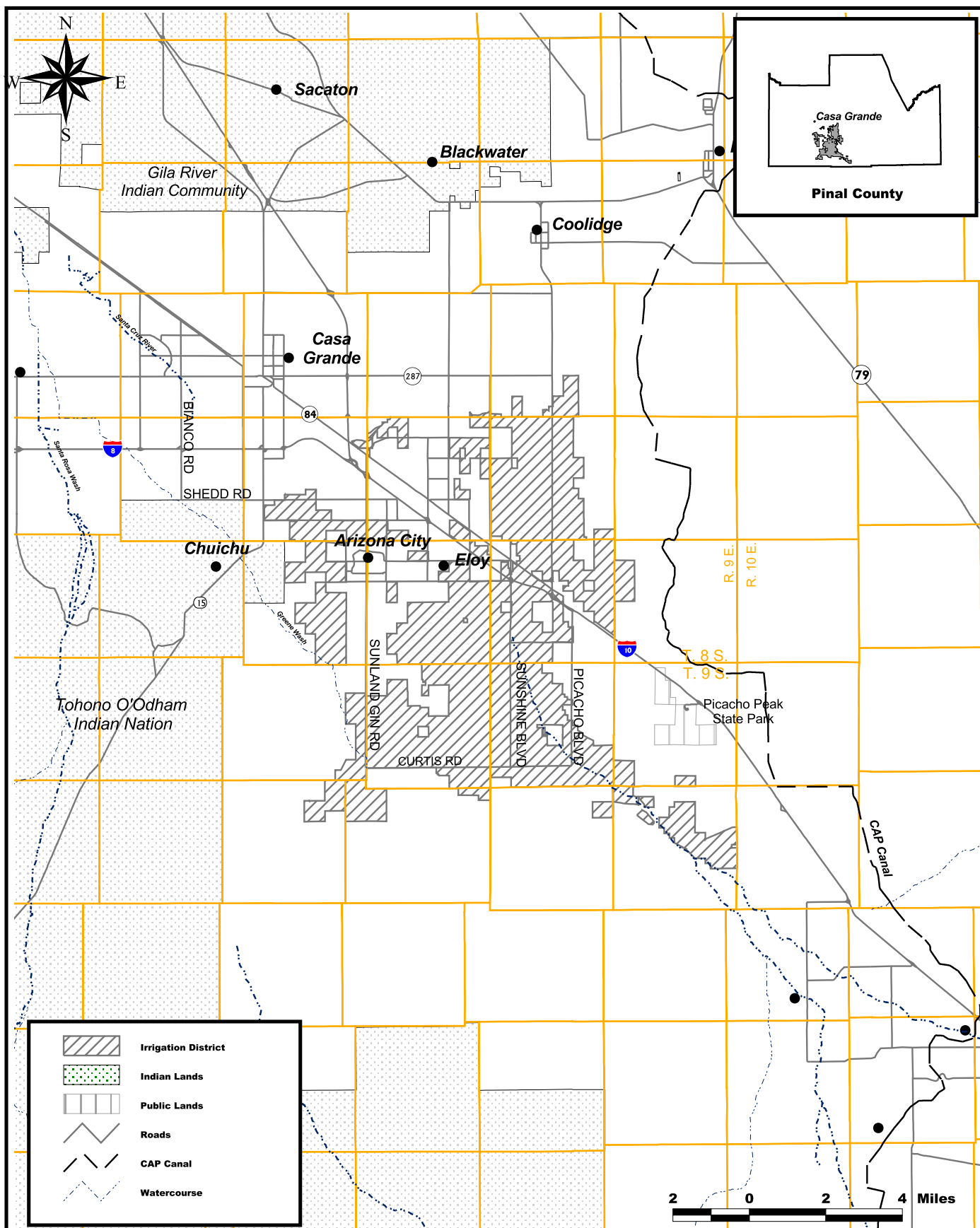
Central Arizona Irrigation and Drainage District (CAIDD) was organized in 1964 for the purpose of securing supplemental water from the Central Arizona Project (CAP). The district is located approximately four miles southeast of Casa Grande in Pinal County. CAIDD delivered a total of 207,879 af of water in 1998. Of that total, 74,193 af, or 36 percent, was from groundwater, and 133,686 af, or 64 percent, was CAP water. Figure L-NIA-2 shows the district boundaries for the CAIDD, which covers approximately 96,501 acres. CAP water can only be delivered to CAP-eligible lands within the district.

CAIDD receives CAP water from the Santa Rosa Canal and the East Main Canal, both of which have turnouts on the Fannin-MacFarland reach of the CAP Aqueduct. All of CAIDD's distribution facilities are concrete-lined.

### **I.A. CAP Water Allocation History**

The CAIDD entered into a contract with the United States and Central Arizona Water Conservation District (CAWCD) for 18.01 percent of the available Non-Indian Agricultural (NIA) pool, effective October 1, 1993. In the 1992 NIA reallocation process, CAIDD's percentage of the available NIA pool was increased to 22.74. However, the existing subcontract has not been amended to include the 1992 reallocation. In late 1993, CAIDD entered into a two-party letter agreement with CAWCD under which CAIDD and CAWCD "mutually agreed to waive certain rights and obligations under the Water Service Subcontract." The United States is challenging these agreements in ongoing litigation regarding operation of the CAP. Nevertheless, CAIDD has contracted for CAP water pursuant to this agreement from the Ag Pools on an annual basis and at a rate reduced from the original requirements.

Under the Settlement Alternative, CAIDD would voluntarily relinquish its allocation of CAP water in exchange primarily for debt relief and access to affordably priced CAP Ag Pool water for the next 30 years (see Chapter II for full description of all alternatives). Under Non-Settlement Alternative 3A, CAIDD would be offered and would accept an allocation of a portion of the available NIA CAP water supply. For purposes of analysis only, this percentage amount has been estimated at 27,342 afa. That CAP water would be delivered for a 50-year contract period (i.e., from 2001-2051) on an as-available basis, with less water anticipated as being available later in time. The CAP water would be used to supplement water supply demands over the next 50 years and would help reduce the continuing dependence on pumping groundwater from an overdrafted groundwater system. Under all the other alternatives, CAIDD would not receive an additional allocation. It should be noted that, even without an allocation, CAP water would continue to be available to CAIDD from the Ag Pool, which is comprised of excess water. Under the Settlement Alternative, CAIDD would receive 27.02 percent of the Ag Pool. Under all other alternatives, CAIDD would receive 33.1 percent of the Ag Pool. Table L-NIA-3 outlines the proposed CAP allocation by alternative.



June 2000

# **CAP Allocation Draft EIS** **General Location Map** **Central Arizona Irrigation and Drainage District**

Figure #L-NIA-2

<b>Table L-NIA-3</b> <b>CAP Allocation DEIS</b> <b>CAIDD – Proposed Additional CAP Allocation</b>		
<b>Alternative</b>	<b>Additional Allocation<sup>a</sup> (in afa)</b>	<b>Priority</b>
Settlement Alternative	0	-
No Action	0	-
Non-Settlement Alternative 1	0	-
Non-Settlement Alternative 2	0	-
Non-Settlement Alternative 3A	27,342 <sup>b</sup>	NIA
Non-Settlement Alternative 3B	0	-
Existing CAP Allocation	71,671 <sup>c</sup>	NIA
<b>Notes:</b> <sup>a</sup> All NIA allocations are percentages of the available NIA CAP water supply. They are converted to fixed af amounts only for ease of calculation in the draft EIS. See Appendix B for the calculation of NIA allocation numbers. <sup>b</sup> This allocation is CAIDD's calculated percentage from the uncontracted NIA pool. <sup>c</sup> Based on 18.01 percent of the available NIA CAP water supply. The status of this allocation is in dispute.		

### **I.B. Water Demand and Supply Quantities**

CAIDD contains 85,434 CAP-eligible acres and 11,067 acres of CAP excess land. No new net acreage can be brought into production as a result of the 1980 GMA. Currently, CAIDD uses approximately 147,977 afa of CAP water, of which 15,913 afa are provided as in-lieu groundwater recharge. Additionally, CAIDD pumps 67,392 afa of groundwater. This water use pattern is based on a five-year average from 1998 to 1994. This water use pattern could change if acreage is taken out of production due to economic reasons or urbanization. Reductions in total water use reflect reductions in farmed acres due to water costs or the lack of access to CAP water.

In order to estimate impacts for the next 50 years, assumptions were made regarding the availability and pricing of CAP water for each alternative. These assumptions are fully described in Appendix A, Background Assumptions. Using the CAP water availability as a base, a model was developed (as described in Appendix D, Socioeconomic Analysis) to project water use and the number of cropped acres based on economic decisions. For example, the economic model predicts whether or not wheat will be grown based on the marginal costs of growing wheat, given the price and availability of water. The land and water uses projected by the economic model were incorporated into the hydrologic inventory model to project groundwater use. The ability of CAIDD to pump and afford the projected water supply was verified using the economic model and available data.

Acreage was also decreased based on urbanization due to population growth.

### **I.C. Specific Construction-Related Impacts**

No new water delivery facilities would be required with one possible exception. Under the Settlement Alternative, RRA restrictions may be lifted, and CAIDD may desire to build new

facilities to deliver CAP water to previously ineligible lands. This possibility is considered speculative at this time and is beyond the scope of this EIS.

#### **I.D. Environmental Effects**

Since construction of water delivery facilities would not likely be required, the primary environmental impacts to CAIDD would result from the availability of CAP water and its cost, under the different alternatives.

##### **I.D.1. Land Use**

Table L-NIA-4 shows the land use pattern for years 2001 to 2051 within the CAIDD area. Approximately 600 acres would be urbanized during the study period and an additional approximately 22,800 acres are estimated to be fallowed due to farming economics. For all alternatives, the 22,800 acres are fallowed in 2043, when the CAP Ag Pool volume goes to zero because of CAP shortage conditions.

<b>Table L-NIA-4</b> <b>CAP Allocation DEIS</b> <b>CAIDD – Projected Agricultural Land Use</b> <b>(Acres)</b>				
<b>Alternative</b>	<b>Year</b>	<b>Land Farmed</b>	<b>Land Urbanized Per Time Step</b>	<b>Land Fallowed Due to Economic Reasons per Time Step</b>
Settlement Alternative	2001	59,723	0	0
	2004	59,540	183	0
	2017	59,387	153	0
	2030	59,269	118	0
	2043	36,362	84	22,823
	2051	36,287	75	0
No Action	2001	59,723	0	0
	2004	59,540	183	0
	2017	59,387	153	0
	2030	59,269	118	0
	2043	36,362	84	22,823
	2051	36,287	75	0
Non-Settlement Alternative 1	2001	59,723	0	0
	2004	59,540	183	0
	2017	59,387	153	0
	2030	59,269	118	0
	2043	36,362	84	22,823
	2051	36,287	75	0
Non-Settlement Alternative 2	2001	59,723	0	0
	2004	59,540	183	0
	2017	59,387	153	0
	2030	59,269	118	0
	2043	36,362	84	22,823
	2051	36,287	75	0
Non-Settlement Alternative 3A	2001	59,723	0	0
	2004	59,540	183	0
	2017	59,387	153	0
	2030	59,269	118	0
	2043	36,362	84	22,823
	2051	36,287	75	0
Non-Settlement Alternative 3B	2001	59,723	0	0
	2004	59,540	183	0
	2017	59,387	153	0
	2030	59,269	118	0
	2043	36,362	84	22,823
	2051	36,287	75	0

### **I.D.2. Archaeological Resources**

Few block surveys have occurred in the project area, but linear surveys along major roads, railroads, and/or pipelines have yielded a few prehistoric sites ranging from small undifferentiated lithic scatters to extensive Hohokam villages dating to the Colonial and Sedentary periods. Protohistoric Pima and historic Anglo occupations also have been documented. South of the entity's boundaries lies the Los Robles Archaeological District, a National Historic Register property. The proximity of this area of high cultural resource sensitivity suggests similar site types might be present within the entity's unsurveyed areas. A series of Reclamation's CAP surveys identified numerous sites just east of the entity's boundaries (e.g., Qukillian 1987). Because some of these sites extend onto the entity's northeastern portion, this area's cultural resource sensitivity is classified as high. Additionally, because of the high potential for sediment deposition near the Santa Cruz River floodplain and adjacent terraces, the potential for buried sites in most of this entity is high. It is not known whether this entity has a local historic preservation program. Cultural resource sensitivity areas in this entity are shown in Figure L-NIA-3. Based on the limited data used to generate the cultural sensitivity designations, the potential for cultural resource impacts in this entity is low to moderate.

### **I.D.3. Biological Resources**

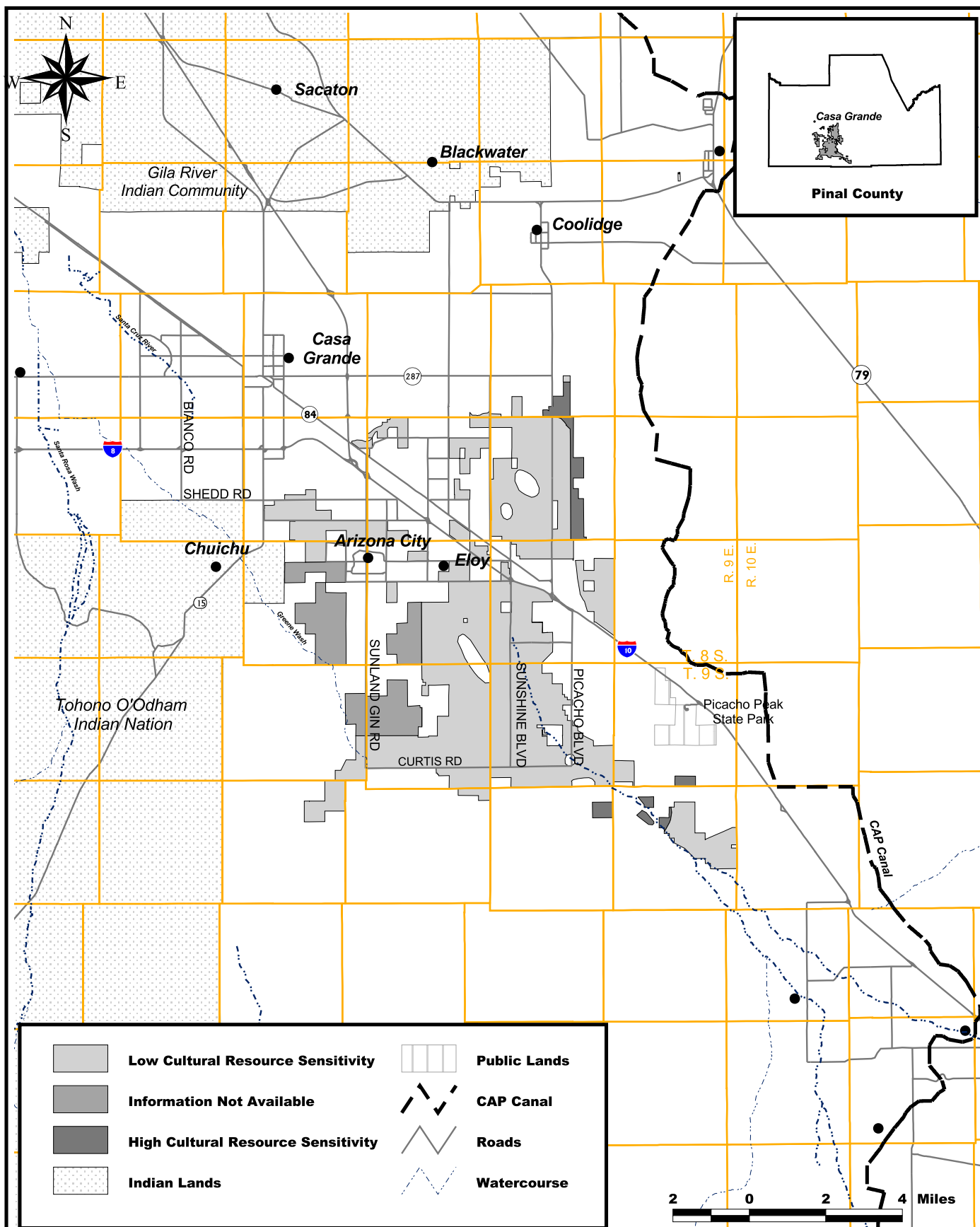
Table L-NIA-4 shows land use over the period of study by alternative. Land stays in agricultural production or is either converted to urban uses or fallowed. The change in land use will result in two possible effects on biological resources. If conversion of agricultural lands to urban use occurs, loss of natural habitat or wildlife is minimal. However, adjacent lands may contain wildlife that might be impacted such as burrowing owls, nests of local birds, and habitat for small mammals. If conversion of agricultural lands to fallow fields occurs, the period of time the land is left fallow will vary. Through the natural revegetation process, these fallow fields can provide fair wildlife habitat in the long term. Reclamation with natural vegetation can enhance this process if these fields will not be developed in the future. Fallow fields often become areas of potential dispersal for noxious weeds.

### **I.D.4. Water Resources**

CAIDD has met historical irrigation demands using groundwater, supplemented in later years with CAP water. Groundwater levels have declined historically in response to the groundwater pumping. The TDS concentration of groundwater is generally from about 500 to 1,000 ppm. CAIDD has experienced subsidence historically, due to the groundwater level declines.

Presented in Table L-NIA-5 are estimated changes in groundwater levels from 2001 to 2051. Estimated groundwater level impacts for each alternative (changes from levels under the No Action Alternative) are also shown.

Under the No Action Alternative, groundwater levels would rise from 2001 to 2017, reflecting the availability of CAP water for in-lieu recharge during that period. After 2017, CAP water would only be available from the Ag Pool, which results in greater groundwater pumping and declining groundwater levels. Overall, groundwater levels under the No Action Alternative would decline by about 68 feet through 2051. The lower groundwater levels would cause an



June 2000

# **CAP Allocation Draft EIS** **Cultural Resources** **Central Arizona Irrigation and Drainage District**

Figure #L-NIA-3

increase in groundwater pumping costs and a continuation of the subsidence that has been historically experienced. Lower groundwater levels might also result in production of poorer quality groundwater at some wells in CAIDD, where there is poorer quality water at depth.

Groundwater levels under the Settlement Alternative and all Non-Settlement Alternatives would also decline by year 2051. The resulting estimated groundwater levels would be within 10 feet of the level estimated for the No Action Alternative. The relatively small differences in groundwater levels primarily reflect differences in the availability of CAP water to CAIDD from the Ag Pool.

<b>Table L-NIA-5</b> <b>CAP Allocation Draft EIS</b> <b>CAIDD – Groundwater Data Table</b>		
<b>Alternative</b>	<b>CAIDD*</b>	
	<b>Estimated Groundwater Level Change from 2001-2051 (in feet)</b>	<b>Groundwater Level Impact** (in feet)</b>
No Action	-68	--
Settlement Alternative	-61	7
Non-Settlement Alternative 1	-68	0
Non-Settlement Alternative 2	-73	-5
Non-Settlement Alternative 3A	-59	9
Non-Settlement Alternative 3B	-73	-5
* Values correspond to CAIDD, as discussed in Appendix I. ** Computed by subtracting the estimated groundwater decline from 2001 to 2051 for the No Action Alternative from the estimated change in groundwater level for the same period for the alternative under consideration. The estimated impact is considered to be more accurate than the estimated decline in groundwater levels.		

#### I.D.5. Socioeconomic

Table L-NIA-6 shows the estimated lost agricultural gross revenues over the 50-year study period resulting from the fallowing of approximately 22,800 acres in 2043, the timing of which varies by alternative. For more information regarding impacts of CAP water reallocation on NIA districts, refer to Appendix D of this publication.

<b>Table L-NIA-6</b> <b>CAP Allocation DEIS</b> <b>CAIDD Estimated Lost Gross Agricultural Revenues 2001-2051 (dollars)</b>	
<b>Alternative</b>	<b>Lost Gross Revenues 2001-2051 (\$)</b>
Settlement Alternative	176,136,513
No Action	176,136,513
Non-Settlement Alternative 1	176,136,513
Non-Settlement Alternative 2	176,136,513
Non-Settlement Alternative 3A	176,136,513
Non-Settlement Alternative 3B	293,560,855